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Air and Radiation 6202J
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NATURAL GAS STAR PROGRAM

PARTNER UPDATE

The STAR Partner Update Returns

After a short break, we are pleased to send you the Summer 1998 edition of the Natural Gas STAR Partner Update. This latest edition has been revised and given a new format in our efforts to continue to improve the quality of information that we provide.

To best communicate your successes, this issue features profiles of the 1997 Partners of the Year and a summary of the 1997 program-wide emissions reductions. Details on our award-winning Partner's implementation experiences and a breakdown of our record emission reductions by BMP are included in this issue.

The STAR Program continues to work hard to provide information on the current events affecting Partners and to improve our technical and communications support. In this issue we highlight the Kyoto Protocol and present many of the new tools and programs we are developing to facilitate and enhance your implementation experience. One of the newest tools, the STAR Decision Support Software, enables you to evaluate emission reduction opportunities for your operations. Details about this software and other new programs and implementation tools can be found inside.

Finally, this issue includes a summary of the 1997 Natural Gas STAR Workshop and some preliminary information on this year's workshop scheduled for October 7-9 in Houston, Texas. Please remember this publication is designed for your benefit. We encourage you to guide the direction of future issues by sending us any feedback, suggestions, and insights that you may have.

Enjoy and keep an eye out for the next STAR Partner Update!

The Natural Gas STAR Team

INSIDE

In the Spot Light	2
Gas STAR Achievements	4
International Partners	5
Partner Profiles	6
Program Tools	9
New Partners	9
Program Activities	10
Workshop Summary	12
Natural Gas STAR Partners	14
Document Request Form	15

Gas STAR Webpage

Visit the new Gas STAR Web Site at WWW.EPA.GOV/GASSTAR

IN THE SPOTLIGHT

Market-Based Approaches Promise to Play Large Role in Addressing Climate Change Concerns

Flexible, market-based policy solutions have historically been a major component of efforts to address concerns over global climate change. Beginning in October 1993, President Clinton and Vice President Gore announced the Climate Change Action Plan (CCAP) as a means to fulfill voluntary greenhouse gas reduction commitments made under the 1992 United Nations Framework Convention on Climate Change. As part of this plan several programs, including Natural Gas STAR, were created in an effort to stimulate actions that are both profitable for individual private-sector participants as well as beneficial to the environment. These actions were designed to be flexible, practical, and cost-effective.

As debate over future international and domestic efforts to address climate change intensify, policy solutions that are market-based, flexible, and rely upon private-sector innovation and initiative promise to continue to play a significant role. The recently negotiated Kyoto Protocol and the Administration's proposal for domestic climate change initiatives rely heavily on market-based policies that seek to achieve both economic and environmental goals.

Kyoto Protocol and Market-Based Mechanisms

The reliance upon market-based approaches is a major component of the Kyoto Protocol agreement reached last December in Japan. Under the Protocol, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed to reductions in the emissions of all six major greenhouse gases including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexaflouride. While the specific reductions vary from country to country, the targets for key industrial nations are similar — 8% below 1990 levels for the European Union, 7% for the U.S., and 6% for Japan and Canada.

Rather than rely upon a strict, command and control method for achieving these emissions reductions, the U.S. successfully pushed for a system of international tradable emissions allowances that would allow for the most flexibility and achieve the most cost-effective solution. Under the international trading system, which would be implemented during a five year budget period from 2008–2012, countries or companies would be allowed to sell their allowances or use them to cover future emissions. Rules

and guidelines — in particular for verification, reporting, and accountability — are to be discussed at the next meeting of the Parties in Buenos Aires in November 1998.

Other key points agreed upon in Kyoto include the involvement of developing countries and the use of other flexible mechanisms for achieving targeted reductions. Specifically, the Protocol includes a Clean Development Mechanism (CDM) which embraces the concept of "joint implementation with credit." As part of the CDM, companies in developed nations could enter into cooperative projects to reduce emissions in the developing world. Companies would be able to reduce emissions at lower costs and developing countries would gain access to environmentally sustainable technologies. In addition, the treaty supports the implementation of carbon absorbing activities, such as planting trees, as a low-cost opportunity for the private sector to reduce emissions and offset established targets.

While binding emissions reductions were not established for developing nations, this issue will be at the center of the debate to come. The Clinton Administration is currently working to gain meaningful participation from key developing countries before submitting the treaty to the Senate for ratification. To enter into force, the Protocol must be ratified by at least 55 countries, accounting for at least 55% of the total 1990 carbon dioxide emissions of developed countries.

The Administration's Call for Action

While the Kyoto Protocol promises to incorporate market based mechanisms into international efforts to address climate change, the Clinton Administration has encouraged a similar philosophy domestically. In October of 1997, the President announced a proposal to provide flexible market-based and cost-effective ways to achieve meaningful reductions here in America. In his announcement, the President emphasized that, "here at home, we must move forward by unleashing the full power of free markets and technological innovations to meet the challenge of climate change."

The Administration's proposal for domestic action calls for a three stage approach. The first stage encourages a series of near-term actions designed to provide incentives and remove barriers to help companies and citizens find new and creative ways of reducing greenhouse gas emissions. Some of the major elements include:

- A $6.3 billion Climate Change Technology Initiative that calls for tax cuts coupled with research and development to support cost-effective, practical actions.
- Developing a system that would be designed to reward proactive businesses that act in the near-term to reduce greenhouse gas emissions.
- Consultations with key industry sectors to encourage the development of their own voluntary greenhouse gas reduction plans.

The remaining stages of the Administration's plan focus on the development and implementation of a domestic, market-based permit trading system for carbon emissions. The second stage would involve a review and evaluation of actions initiated as part of stage one. In addition, the details of the permit system would be outlined and possibly tested. Stage three would involve the implementation and review of the permit trading system and would not be initiated until the completion of a complete economic review and evaluation of all stage one and two actions by Congress and the Administration.

Attaining Environmental and Economic Goals

While the successful implementation of the President's proposal will require Congressional support and the Kyoto Protocol is still considered a work in progress, future efforts to address climate change will undoubtedly rely upon flexible, market-based strategies. Such market-based approaches are important components in ensuring the achievement of both economic and environmental goals. As Stuart Eizenstat, Under Secretary of State for Economic, Business and Agricultural Affairs and the U.S.'s chief negotiator at Kyoto, stated "The Kyoto Protocol enshrines a centerpiece of the U.S. market-based approach — the opportunity for companies and countries to trade emissions permits… This is not only economically sensible, but environmentally sound."

GAS STAR ACHIEVEMENTS

STAR Program Achieves Record Emission Reductions, Again

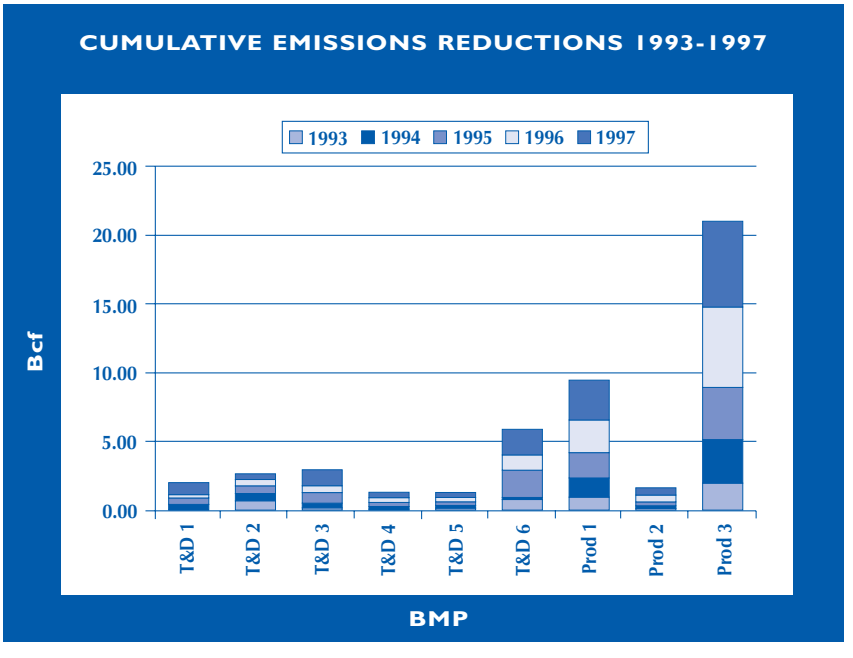
Natural Gas STAR Partners achieved their highest emissions reductions in the fifth year of the program (1997). Production and Transmission and Distribution (T&D) Partners reported savings of 14.8 billion cubic feet (Bcf) in 1997, compared to 11.7 Bcf in 1996, 10.3 Bcf in 1995, 7.9 Bcf in 1994, and 4.8 Bcf in 1993. Total program savings since 1993 reached 52.8 Bcf, worth $105.6 million.

The majority of Program savings were achieved through the implementation of additional cost-effective methane reduction activities identified by Partners — Partner Reported Opportunities (PROs). This industry innovation has been a large factor in making the Natural Gas STAR program successful. Since the beginning of the T&D program in 1993, T&D Partners reduced 17.4 Bcf – 42% from T&D BMP 6 (PROs). The Producer program, since its inception in 1995, has reduced 35.4 Bcf – 64% from Producer BMP 3 (PROs).

A breakdown of the BMPs and their corresponding reductions is illustrated below:

Best Management Practices (BMPs) Implemented by STAR Partners.

BMP	Transmission and Distribution (T&D)
1	Directed inspection and maintenance at gate stations and surface facilities
2	Identify and rehabilitate leaking distribution pipe
3	Directed inspection and maintenance at compressor stations
4	Greater use of turbines in place of reciprocating engines
5	Identify and replace high-bleed pneumatic devices
6	Partner Reported Opportunities
BMP	Production
1	Identify and replace high-bleed pneumatic devices
2	Install flash tank separators at glycol dehydrators
3	Partner Reported Opportunities



INTERNATIONAL PARTNERS

RAO Gazprom Moves to Reduce Methane Emissions

Russia's RAO Gazprom, the world's largest natural gas producer and transporter, has adopted a first ever company-wide methane emissions reduction program. Modeled after EPA's Natural Gas STAR Program, Gazprom's effort follows a successful four-year technical exchange with EPA and the Department of Energy through the US/Gazprom Working Group.

The Gazprom program calls for a 30% reduction in natural gas losses and internal gas use by 2005. The program will improve system operating efficiencies and reduce soil, groundwater and air pollution as well.

"We are extremely pleased with the environmental leadership demonstrated by RAO Gazprom," said Mary D. Nichols, EPA's Former Assistant Administrator for Air and Radiation. "Adoption of this methane emissions reduction program is a giant leap forward in the global effort to protect the environment and improve energy efficiency."

The program consists of four major elements: improving monitoring and measurement of losses, identifying specific remediation needs, implementing projects to reduce emissions, and increased cooperation with international organizations.

Areas where Gazprom will work to reduce emissions include losses in production of associated gas, fugitive emissions during pipeline repair, emissions from compressor stations, and storage and refining "unaccounted for" gas estimates.

Gazprom has identified over 20 specific projects where investment in new gas plants and equipment would reduce losses and emissions. Many of these could qualify as "joint implementation" projects, where a U.S. company could receive greenhouse gas emission reduction "credits" for their efforts. Some of the projects include:

- Initiating the use of the compressor "Gazlift-04" to transmit low-pressure associated gas to main pipelines.
- Developing and using progressive technologies to collect and utilize natural gas emitted into the atmosphere during compressor starts and stops, scrubbers, separators, and other devices.
- Designing and using newly constructed blowdown vents, which can operate in special conditions (high gradients of pressure, high gas velocity, abrasive wear-and-tear, etc.).
- Designing new effective gate valves and developing methods for monitoring the drops in gas pressure in order to control hermetic sealing of gas pipelines.

In 1996, Russia produced 21.2 Tcf of natural gas and exported 4.4 Tcf to Western Europe. Gazprom accounts for 95% of the production and all of the transportation and exports. Gazprom operates 370,000 km of pipeline, 250 compressor stations and 31 storage fields. Total losses from transmission and distribution are estimated at 1.4 percent.

PARTNER PROFILES

Marathon Oil: Producer Partner of the Year

Marathon Oil Company, a subsidiary of USX Corporation, was named Producer Partner of the Year at the 1997 Natural Gas STAR Workshop. Marathon was praised for significant contributions in three areas. Marathon has led in achieving large reductions in methane emissions — 7.8 Bcf and $16 million in savings since 1990. Marathon personnel have provided EPA with valuable advice and ongoing support for the Natural Gas STAR Program. Finally, Marathon has conducted valuable research that has led to improvements in the industry's knowledge of effective strategies to reduce methane losses.

John Weust and Tom Breninger accept the Producer Partner of the Year award for Marathon from the Natural Gas STAR Program managers Rhone Resch (far right) and Paul Gunning.

Since 1990, Marathon has aggressively pursued methane emissions reductions in all facets of its operations. Marathon has identified and implemented 21 operational practices for reducing methane emissions. Some of these methane reduction practices include installing vapor recovery units, replacing pneumatic devices with instrument air systems, using lower heater treater temperatures, utilizing down-hole plunger lifts in wells, eliminating and consolidating excess dehydrators, and inspecting and replacing tank vent seals.

Marathon has made major contributions to the Natural Gas STAR Program in helping to promote the program and improve the quality of available information. Marathon has published papers and made presentations on Natural Gas STAR Best Management Practices (BMPs) and has helped EPA to better understand the technological and economic issues of these BMPs. Through the work done and shared by Marathon, the STAR Program has developed solid information on better ways to reduce methane emissions profitably.

Atlanta Gas Light: Distribution Partner of the Year

Atlanta Gas Light Company (AGL), the largest natural gas distribution company in the southeastern United States, was named the 1996 Natural Gas STAR Distribution Partner of the Year. As a model STAR Partner, AGL has aggressively implemented Natural Gas STAR Best Management Practices (BMPs) and has achieved significant gas savings. In addition, they have helped EPA better understand emissions at surface facilities through the testing and application of cutting-edge technologies.

Atlanta Gas Light Company

Terry Ryland of Atlanta Gas Light accepts the Distribution Partner of the Year award from the Natural Gas STAR Program managers Rhone Resch (r) and Paul Gunning (l).

Atlanta Gas Light is effectively reducing its natural gas emissions through active implementation of STAR BMPs. Directed inspection and maintenance (DI&M) programs at surface facilities have helped AGL effectively lower costs and reduce leaks by prioritizing leaking stations and components for survey and repair. In 1994, 1995, and 1996 AGL surveyed a total of 58, 81, and 83 surface facilities respectively, repairing a total of 659 leaks at a savings of 137,025 Mcf worth approximately $275,000.

In addition, AGL is effectively implementing an identification and rehabilitation program for leaky distribution pipe. From 1994 to 1996, AGL has replaced a total of 763 miles of distribution pipe and repaired a total of 38,829 leaks for an estimated emissions reduction of 111,329 Mcf, worth approximately $223,000.

Atlanta Gas Light has also been instrumental in testing the Hi-Flow Sampler. Unlike conventional testing, the Hi-Flow Sampler draws in air surrounding a leaking component, capturing virtually all the escaping gas and eliminating the need to enclose the component in a bag. The concentration of methane in the sample air stream is then measured using an internal flame ionization device. The resulting concentration measurement can then be used to calculate component leak rates. At one of their meter stations AGL was able to reduce total leak rates by nearly 83% in one year.

AGL has demonstrated its commitment to energy efficiency and environmental protection through its participation in EPA's Natural Gas STAR Program. AGL, which also operates under the trade name Chattanooga Natural Gas, serves over 1.4 million residential, commercial, and industrial customers.

Enron: Transmission Partner of the Year

At the 1997 Natural Gas STAR Annual Implementation Workshop, EPA recognized Enron as the 1996 Transmission Partner of the Year for their significant contributions to the Natural Gas STAR Program. Enron has actively participated in EPA-sponsored research on leaks from natural gas compressor stations, helping test the accuracy of Hi-Flow Sampler leak measurements. In addition, Enron has successfully implemented the Program's core management practices and has helped EPA and other Partner companies better understand some of the other cost-effective technologies that are available.

In 1996, Enron worked closely with the Natural Gas STAR Program to develop information about leaks from pipeline facilities. As part of this effort, Enron sponsored quarterly measurements at compressor stations and surface facilities and compared its traditional methods for leak detection and measurement — involving concentration readings and conversion factors — with direct measurements taken with the Hi-Flow Sampler.

Enron's Marc Phillips accepts the Transmission Partner of the Year award from the Natural Gas STAR Program managers Rhone Resch (r) and Paul Gunning (l).

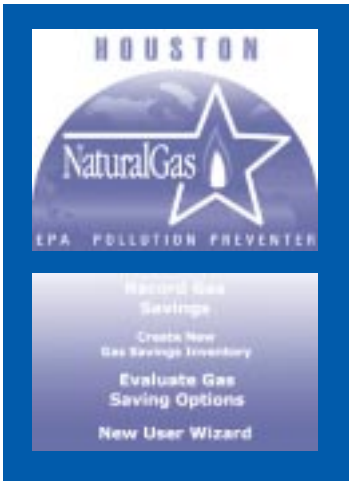
In addition to their work with leak detection and measurement, Enron actively implemented several STAR BMPs to achieve significant methane savings. Enron's largest emissions reductions, however, came from Partner Reported Opportunities (BMP VI), which resulted in estimated savings of over 100,000 Mcf. Enron attributes the reductions to the following activities:

- Installed 17,000 HP electric motors
- Blocked-in ESD test (11 locations)
- Installed 3-phase separators on dehydrator reboilers
- Replaced engine gas starter with air starter
- Repaired large pipeline valve leak
- Lowered pipeline pressure prior to maintenance (10 locations)

In naming Enron as Transmission Partner of the Year, the Natural Gas STAR Program recognizes Enron's efforts to reduce emissions and provide leadership in the Program. Enron's pipeline group operates 31,000 miles of high-pressure pipeline in six companies — Northern Natural, Transwestern, Florida Gas, Louisiana Resources, Northern Border and Houston Pipeline. Much of the work Enron has sponsored has been on its Northern Natural system.

PROGRAM TOOLS

STAR Decision Support Software



To streamline program administration, the Natural Gas STAR team at EPA is developing the STAR Decision Support Software (DSS). This new implementation tool is an easy-to-use software program that allows Partners to evaluate the Best Management Practices (BMPs) by estimating the quantity of methane emission reductions and the costs and benefits of implementation. In addition, the software facilitates the recording and reporting of the results of BMP implementation, including the volume and value of annual methane savings.

While this new tool is currently being improved and updated, Partners are encouraged to test the beta version of the software and provide suggestions and comments. A copy of the STAR DSS and user manual is included in the STAR Implementation Road Map or can be ordered using the form provided in this newsletter. The software can also be downloaded from the Natural Gas STAR homepage at www.epa.gov/gasstar. Any suggestions or technical questions should be emailed directly to the EPA Program Managers at resch.rhone@epa.gov or gunning.paul@epa.gov.

NEW PARTNERS

EPA Welcomes New Natural Gas STAR Partners

Amerada Hess Corporation
Burlington Resources
Kansas Operating Pipeline Corporation
Minnegasco
Southwest Gas Corporation
Spirit Energy 76, A Business Unit of Unocal
Union Pacific Resources

BURLINGTON RESOURCES

SPIRIT ENERGY 76
New Name. Same Spirit.
A Business Unit of Unocal

UPR™

SOUTHWEST GAS CORPORATION

Minnegasco®

KPOC

HESS

PROGRAM ACTIVITIES

Natural Gas STAR in the News

Look for a feature article on the Natural Gas STAR Program in the March 1998 issue of the American Oil & Gas Reporter. This article focuses on the STAR Producer Program and highlights Partner impressions and the successes of this unique industry — government partnership. EPA would like to thank the following STAR Partners for their important contributions to the article:

- Brooklyn Union Gas
- Chevron U.S.A. Production Company
- Marathon Oil Company
- Mitchell Energy & Development Corporation
- Mobil Oil Corporation, Exploration & Producing Division
- Natural Gas Pipeline Company of America

The Natural Gas STAR Brochure

In our efforts to provide Partners with public recognition for their achievements, the STAR Program has created a new program brochure. The new brochure includes an overview of the Program's mission, information on how EPA specifically teams up with industry to effectively tackle challenges facing businesses today, STAR Partner success stories, and a list of active program participants.

The Natural Gas STAR Program is intended to provide you with a vehicle to communicate, both internally and externally, your organization's voluntary commitment to a successful, cost-effective, and innovative partnership. The new brochure is available to all Partners and anyone else you think would benefit from receiving this information. Feel free to use excerpts from this brochure in your corporate communications.

Contact us directly, fill out the attached order form, or call the toll-free Hotline at 1-888-STAR-YES (1-888-782-7937) to request copies of the brochure.

EPA Launches STAR Service Program

This spring the STAR Service Program was launched as a new benefit for Partner companies. The STAR Service Program is intended to improve Partner access to STAR information, provide a higher level of implementation assistance, and enhance the overall participation experience.

As part of this new program, STAR Service Representatives have been assigned to each Partner company. These representatives are trained to answer all program-related questions, assist in preparing and submitting implementation plans and annual reports, provide information on new program and technological developments, and help publicize and promote Partner participation and achievements.

Rhone Resch and Paul Gunning, EPA Natural Gas STAR Program Managers, will be working closely with the service representatives and will continue to be accessible to all Partners. Natural Gas STAR is excited about this new service and looks forward to greater interaction with Partner companies.

The 1998 Natural Gas STAR Implementation Workshop will be held October 7 – 9, 1998 in Houston, Texas.

Natural Gas STAR Plans Emission Reduction Verification Effort

In response to Partner requests at the 1997 STAR Implementation Workshop, the Natural Gas STAR Program is developing a process for ensuring the accurate accounting of partner savings and accomplishments. The first step, a verification effort, is being initiated as a means of identifying information and materials that could be provided as part of the annual reporting process to support STAR Partner reductions.

The EPA Gas STAR Program Managers will be working with Partners throughout the year to develop a list of supporting materials. In addition, all Partners will be given the opportunity to discuss their ideas and insights regarding verification at the October 7 – 9, 1998, STAR Implementation Workshop in Houston, Texas. In the meantime, EPA has asked Gas STAR Partners for suggestions on the type of materials and information that are readily available and could be easily provided with minimal administrative burden. Examples of supporting materials might include:

- Site information, equipment models, dates, and names of contractors or foremen overseeing equipment installation for equipment BMPs.
- Name and signature of the managers or inspectors implementing the BMP, and the sites and dates where the BMPs were implemented.
- Methodology used to calculate emission reductions (e.g., EPA defaults, engineering judgement, test data, or other sources of emission factors).
- Descriptions of your calculation procedures for calculation methods other than the default EPA methods.
- Purchase Orders from the vendors describing the equipment.

Please contact the EPA Gas STAR Program Managers with your suggestions for the verification effort.

Lessons Learned

One of the primary goals of the Natural Gas STAR Program is to facilitate technology transfer on cost-effective methods of reducing methane emissions. The Lesson Learned Studies, produced by EPA in collaboration with STAR Partners, are good examples of the STAR Program's success in this area. The Lessons Learned Studies help companies implement Best Management Practices (BMPs) and avoid pitfalls by providing detailed economic and technical information obtained directly from Partners' implementation experiences. The Lessons Learned focus on both core BMPs and Partner Reported Opportunities (PROs). PROs are additional cost-effective technologies and practices that STAR Partners have identified to further reduce emissions of methane. Currently, the Natural Gas STAR Program is researching about 50 PROs, several of which will be written about in upcoming Lessons Learned Studies.

The nine Lessons Learned studies currently available are designed specifically to discuss implementation strategies and tips, technological background, and economic data, and additional tools that can assist in the decision making and implementation processes.

Lessons Learned are available on:

Core Best Management Practices:

- Directed Inspection and Maintenance at Compressor Stations
- Directed Inspection and Maintenance at Gate Stations and Surface Facilities
- Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry
- Installation of Flash Tank Separators

Partner Reported Opportunities

- Reducing Methane Emissions From Compressor Rod Packing Systems
- Reducing Emissions when Taking Compressors Off-Line
- Installing Vapor Recovery Units on Crude Oil Storage Tanks
- Replacing Wet Seals with Dry Seals in Centrifugal Compressors
- Reducing the Glycol Circulation Rates in Dehydrators

To order Lessons Learned studies, use the order form provided in this newsletter or feel free to contact the EPA Program Managers or your Service Representative for more information.

WORKSHOP SUMMARY

The Natural Gas STAR 1997 Workshop Highlights

Partners Discuss Program Implementation at 1997 Natural Gas STAR Workshop

On October 28 and 29, 1997, EPA, along with the American Gas Association (AGA), Interstate Natural Gas Association of America (INGAA), and the American Petroleum Institute (API) co-sponsored the Fourth Annual Natural Gas STAR Implementation Workshop in Washington, DC. Over 75 people from oil and natural gas companies and equipment vendors attended the two-day event. The 1997 Workshop highlighted the accomplishments of the Natural Gas STAR Program, Partners' implementation successes, and new Program implementation tools. Most importantly, the Workshop provided a forum for Partners to share their implementation experiences.

Steve Seidel, of the White House Climate Change Task Force, delivers the Keynote Address at the 1997 STAR Workshop. On the right is Dina Kruger, Chief of EPA's Methane and Utilities Branch.

Program Implementation — Technology Transfer Breakout Sessions

Partners identified the technology transfer breakout sessions as the most rewarding aspect of the 1997 workshop. These sessions were effective in engaging Partners in discussions about barriers to program implementation and technology transfer, ways to improve and enhance technology transfer, and ways in which EPA can assist in the process. Some of the barriers identified by Partner companies included communication, time constraints, and low acceptance of new technology. Potential solutions to overcoming these barriers focused on direct interaction with facility engineers, rewarding innovation and technology transfer with incentive programs, and more neutral third party testing of new technology. The chart on the next page provides more detail on the top five barriers to implementation and potential remedies, as identified by Partner companies.

Workshop Highlights

In addition to the breakout sessions, the Workshop provided a wealth of technical information and the opportunities to discuss climate change issues with key policy makers. The following are highlights from the general Workshop sessions:

- Steve Seidel, of the White House Climate Change Task Force, delivered the Keynote Address, which outlined the U.S. position on climate change and the Administration's three-stage plan for meeting the emissions reduction targets in the Kyoto Protocol. Dr. Rosina Bierbaum of the White House Office of Science and Technology summarized the science of climate change. These presentations offered a rare opportunity to hear from Administration policy makers. EPA's Paul Stolpman, Director of Atmospheric Programs spoke on the EPA's commitment to voluntary programs. He acknowledged the successes of the STAR

Program, while recognizing that wider industry participation is important.

- A special session was held on pneumatic devices, the largest source of emissions from the natural gas sector and one of the more challenging for finding solutions. Presentations on the mechanics of pneumatic devices, on the Lessons Learned Study of pneumatics, a summary of a pneumatic device survey at Marathon Oil facilities, and by vendors provided a good review of the issues and questions on pneumatic device management.
- John Weust of Marathon Oil and Mark Phillips of Enron presented their companies' experiences with the Natural Gas STAR Program. Mr. Weust spoke about Marathon's most effective emissions reduction practices — the installation of vapor recovery units and high-efficiency combustion chamber flares. Mr. Phillips presented Enron's testing of the High-Flow Sampler. Both Partners gave examples of how being STAR Partner helped them cost-effectively reduce methane emissions.
- The Natural Gas STAR Program introduced several new implementation tools at the workshop. The Natural Gas STAR website was unveiled, as well as the Decision Support Software, designed to help Partners identify which Best Management Practices are cost-effective for their companies. The STAR Program also presented 9 new Lessons Learned studies. Lessons Learned Studies serve as effective guides for implementing Best Management Practices and include real cost data from Partner companies.
- EPA is looking forward to the 5th Annual Natural Gas STAR Implementation Workshop which will convene in Houston, Texas, on October 7-9, 1998. All Partners are encouraged to participate in the Workshop.

Partner-Identified Barriers to STAR Program Implementation and Suggested Solutions

Issue	Examples / Explanation	Potential Solution
Communication	Communication within a company can be difficult given diverse regions and organizational autonomy	• Make personal visits to regional offices • Get senior buy-in and directive • Use trade association knowledge and resources • Deal with facility/plant engineers directly, not through embedded Environmental Health and Safety personnel • Publicize failures so others do not repeat mistakes
Time constraints	Downsizing of companies has reduced personnel and created heavy workloads	• Make environmental performance an evaluation criterion for operational personnel • Assign STAR Program manager regional assistants to create a network • Reward technology transfer with an incentive program
Corporate culture	Current corporate climate of cost-cutting, downsizing, restructuring can make STAR a low priority	• Show management how STAR participation can promote efficiency and affect their bottom line • Possible government allocation of emission reduction credits (i.e., tax credits) can generate revenue
Low acceptance of new technology	Resistance to change, uncomfortable with new technology and methods	• Have management encourage technology by awarding innovation • Neutral third-party testing of technology • Provide regulatory or tax incentives for companies who implement STAR
Training and education	Lack of training to use new technology, lack of knowledge about who and how	• Encourage operations discussion with and field visits to other companies which have implemented cost-effective change • Hire a consultant to evaluate system and develop an implementation plan

GAS STAR PARTNERS

Transmission & Distribution Partners

ANR Pipeline Company ◆ Atlanta Gas Light Company ◆ Baltimore Gas and Electric Company ◆ Bay State Gas Company ◆ Brooklyn Union ◆ Central Hudson Gas & Electric Corporation ◆ Citizens Gas & Coke Utility ◆ Colorado Interstate Gas Company ◆ Columbia Energy Group Distribution Companies (5) (Columbia Gas of KY, MD, OH, PA, VA, Inc.) ◆ Consolidated Edison Company of New York, Inc. ◆ Consumers Energy ◆ Conective ◆ El Paso Natural Gas Company ◆ Enron Corporation ◆ Equitable Resources, Inc. ◆ Granite State Gas Transmission, Inc. ◆ Great Lakes Gas Transmission Company ◆ Iroquois Gas Transmission System ◆ Kansas Operating Pipeline Company ◆ Long Island Lighting Company ◆ Louisville Gas & Electric Company ◆ Michigan Consolidated Gas Company ◆ MidCon Texas Pipeline Corporation ◆ Minnegasco ◆ Natural Gas Pipeline Co. of America ◆ New York State Electric & Gas Corporation ◆ Niagara Mohawk Power Corporation ◆ Northern Indiana Public Service Company ◆ Northern Utilities, Inc. ◆ Northwest Natural Gas Company ◆ Orange and Rockland Utilities, Inc. ◆ Pacific Gas and Electric Company ◆ PECO Energy Company ◆ Public Service Company of North Carolina ◆ Public Service Electric and Gas Company ◆ Rochester Gas & Electric Corporation ◆ South Carolina Electric & Gas Company ◆ Southern California Gas Company ◆ Southern Natural Gas Company ◆ Southwest Gas Corporation ◆ Superior Water, Light and Power Company ◆ Tennessee Gas Pipeline ◆ Texas Gas Transmission Corporation ◆ Transcontinental Gas Pipe Line Corporation ◆ UGI Utilities, Inc. ◆ Washington Gas Light Co. ◆ Wisconsin Public Service Corporation

Production Partners

Amerada Hess Corporation, U.S. Exploration and Production ◆ Amoco Corporation ◆ Burlington Resources ◆ Chevron U.S.A. Production Company ◆ Exxon Company, U.S.A. ◆ FINA Oil and Chemical Company ◆ Kerr-McGee Corporation ◆ Marathon Oil Company ◆ Mitchell Energy and Development Corp. ◆ Mobil Oil Corporation Exploration and Producing Division ◆ Pennzoil Exploration and Production Company ◆ SCANA Petroleum Resources, Inc. ◆ Shell Exploration and Production Company ◆ Spirit Energy 76, A Business Unit of Unocal ◆ Texaco ◆ The Stranded Gas Association, Inc. ◆ Union Pacific Resources

Endorsers

American Gas Association (AGA) ◆ American Petroleum Institute (API) ◆ Gas Research Institute (GRI) ◆ International Centre for gas Technology Information (ICGTI) ◆ Interstate Natural Gas Association of America (INGAA) ◆ National Association of Regulatory Utility Commissioners (NARUC) ◆ Natural Gas Supply Association (NGSA) ◆ New York State Energy Research and Development Authority (NYSERDA) ◆ Southern Gas Association (SGA)

DOCUMENT REQUEST FORM

Name & Title: _____

Organization: _____

Street Address: _____

City, State, Zip: _____

E-Mail Address: _____

Telephone #: _____ FAX #: _____

Date Requested: _____

Date Info Needed: _____

FedEx/UPS # (if info needed asap): _____

Please fax to your STAR Service Representative or directly to the Natural Gas STAR Program at 202-565-2077.

PLEASE INDICATE WHICH MATERIALS YOU WOULD LIKE TO RECEIVE:

LESSONS LEARNED

_____ 1. Directed Inspection and Maintenance at Compressor Stations
_____ 2. Directed Inspection and Maintenance at Gate Stations and Surface Facilities
_____ 3. Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry
_____ 4. Installation of Flash Tank Separators
_____ 5. Reducing Methane Emissions from Compressor Rod Packing Systems
_____ 6. Reducing Emissions When Taking Compressors Off-Line
_____ 7. Installing Vapor Recovery Units on Crude Oil Storage Tanks
_____ 8. Replacing Wet Seals with Dry Seals in Centrifugal Compressors
_____ 9. Reducing the Glycol Circulation Rates in Dehydrators

STAR IMPLEMENTATION TOOLS

_____ Decision Support Software
_____ Decision Support Software Manual

OUTREACH MATERIALS

_____ Natural Gas STAR Program Brochure
_____ Natural Gas STAR Marketing Package

United States
Environmental Protection Agency
Air and Radiation (6202J)
Washington, DC 20460-0001

Official Business
Penalty for Private Use
$300

First Class Mail
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EPA
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